

QUARTERLY GROUND WATER MONITORING REPORT

**YAKIMA AGRICULTURAL RESEARCH LABORATORY
QUARTER NO. 5 - OCTOBER 1991**

*November 1, 1991
Our Project No. 90042*

USEPA SF



1599700

*Prepared for
U.S. DEPARTMENT OF AGRICULTURE*

*Quarter No. 1
thru 4 are
on the way -
as separate
volumes.*

HONG WEST & ASSOCIATES

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HONG WEST & ASSOCIATES

• Geotechnical Engineering • Hydrogeology • Materials Testing • Construction Inspection •

November 1, 1991

Lyndia Countee, Chief
Service Contracts Section, CAD
U.S.D.A.
6303 Ivy Lane, Room 762
Greenbelt, MD 20770-1433

RECEIVED
JAN 27 1992
RCRA COMPLIANCE SECTION

RE: Quarterly Monitoring Report # 5 (Final Post-Closure Monitoring Report)
July-October, 1991
Contract No. 53-3K06-0-24
Yakima Agricultural Research Laboratory

Dear Lyndia:

Attached please find one (1) copy of Hong West & Associates' *Quarterly Monitoring Report # 5* submitted for USDA's use during the on-going RCRA Clean Closure effort. As required, five (5) copies of the Report have been transmitted to Mr. Alvin Humphrey of USDA for technical review and report dissemination.

In summary, the year-long monitoring of ground water at YARL is complete. Members of the Hong West Team have performed a preliminary quality assurance check of the field and laboratory data; this work is currently in the final phases of completion. Although there were the typical problems of broken sample containers and other shipping related problems, we consider the overall quality of the data to be representative, and should demonstrate unequivocally that YARL does not have a ground water quality problem. Should there be any questions or comments concerning this Report submittal, please direct them to myself or Doug Geller.

Respectfully submitted;

HONG WEST & ASSOCIATES

Larry West For
Larry West, Vice-President
Project Director

LW/dg

cc: A. Humphrey (5)
S. Cohen (1)
G. Rosenthal (1)

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**YAKIMA AGRICULTURAL RESEARCH LABORATORY
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- Appendix 2-2 Original Laboratory Data and Chain of Custody

1.0 Monitoring System Summary

Three additional ground water monitoring wells were installed at the YARL site during June and July of 1990. These in, combination with the wells installed during the previous study (Biospherics, Inc. 1988), complete the RCRA detection monitoring system required for the Clean Closure effort.

Details of the new wells appear in a separate report (Well Construction Report, August 29, 1990). To summarize, two of the new wells were screened at intervals ~~similar to the other four wells (the upper-most 10 feet of the site aquifer)~~. The third well was installed as a deep sampling piezometer at 125 feet to provide information regarding vertical hydraulic and chemical gradients within the upper aquifer.

The approved Sampling and Analysis Plan includes one year (5 rounds) of quarterly ground water monitoring, sampling and analysis for a variety of indicator parameters, organic and inorganic compounds. The objectives of the monitoring are as follows:

1. Determine depth to ground water and direction of ground water flow monthly.
2. Quantify ground water quality up-gradient and down-gradient from the former waste management area on a quarterly basis. This sampling should screen for indicator parameters and a specified list of organic and inorganic compounds.
3. Provide substantive data for hydrogeologic evaluation, risk assessment and final site closure.

The Post-Closure quarterly monitoring commenced in August, 1990. The first post-closure monitoring report was completed October 10, 1990. Subsequent monitoring events and reports are summarized below:

Quarter No. 2: Sampled 11/14/90; Reported 1/23/91

Quarter No. 3: Sampled 3-13-91; Reported 5/3/91

Quarter No. 4: Sampled 5-6-91; Reported 7/30/91

Quarter No. 5: (this report) Sampled 10/1/91; Reported 11/1/91

Originally, samples for Quarter No. 5 were collected 8/16/91; however, the samples did not arrive at the laboratory intact due to a shipping error (broken bottles and samples arrived warm), and a decision was made to resample. During the resampling effort, October 1, 1991, some bottles again arrived at the Biospherics

lab broken. Due to project scheduling constraints and the relative wealth of ground water quality data, analyses for the broken samples were abandoned.

2.0 Monitoring Procedures

2.1 Well Monitoring

The YARL site was visited on October 1, 1991 by the Hong West Team for the purpose of conducting the fifth and final quarterly ground water monitoring and sampling field work. As per the Sampling and Analysis plan, a specific procedure was followed. First, water levels were taken in all the wells, with measurements made to the nearest .01 foot. Between each measurement, the well probe was decontaminated with a methanol wash followed by a distilled water rinse, to minimize the potential for well cross-contamination.

2.2 Well Purging

Once the static water levels were obtained, well purging and sampling commenced. The predetermined sampling order was followed, beginning with up-gradient and off-gradient wells and proceeding to wells directly down-gradient from the former septic tank and drainfield areas. Although not physically closest to these source areas, MW-C was sampled last because of its prior history of low detectable levels of volatile organics. The following sampling order was followed:

1. MW-D
2. MW-G
3. MW-B
4. MW-F
5. MW-E
6. MW-A
7. MW-C

Each well was purged using the dedicated Well Wizard pumps driven by an automatic controller which sent regular, periodic surges of nitrogen gas to displace the ground water to the surface via the pump's teflon tubing. During well purging, the pumped water was monitored for pH, temperature and conductivity. Purging was continued for a minimum of 5 well volumes, or until the indicator parameters stabilized.

2.3 Well Sampling

As per the Sampling and Analysis plan, samples were withdrawn from each well sequentially in decreasing order of volatility and instability, beginning with volatile organics (into 40 ml glass vials for 8240 analysis) then pesticides (into 1 liter amber bottles for 8080, 8140 and 8150 analyses) and metals (500 ml poly cubes for 6010, 7000 and 7470 analyses).

After each well was sampled, the bottles were sealed with Chain of Custody seals, labeled and placed in iced coolers for priority shipment to the laboratory. A chain of custody was filled out at the same time and signed by the sampling technician (Russell Thompson of Sweet-Edwards/Emcon). A field blank (prepared in the field) and trip blank (filled in the lab and shipped to and from the field) were added to the samples prior to shipment. A duplicate from MW-D (90042-1091-D2) was also taken.

The sample numbering scheme is as follows:

90042-1091-A1 refers to HWA project number 90042, October, 1991
sample number one from Monitoring Well A

3.0 Ground Water Observations

There is no history of ground water contamination at YARL; hence, sampling was performed at a personal safety level of D. During ground water sampling, no unusual water discoloration or odor was observed. The weather was warm and overcast, with temperatures in the 60s by mid-day. No precipitation had occurred in the Yakima area during the previous four weeks.

Ground water levels were measured on June 13 1991, July 16, 1991, August 16, 1991 and during the sampling event on October 1, 1991. Depth to ground water averaged approximately 34 feet and flow was generally toward the southeast under a gradient of .004 ft/ft. The ground water contours for the June, July, August and October monitoring events are shown in Figures 2-A, 2-B, 2-C and 2-D, respectively. HWA's ground water database depicting all YARL ground waters levels taken to date appears as Figure 2-E. Contours typically show the characteristic flow direction across the site from easterly to southeasterly. The August 16 reading for MW-G is probably in error (too high), as it shows a ground water high around MW-G (Figure 2-C), indicating local recharge which is not the case. The actual flow direction is more accurately represented in the area between MW-A and MW-C on Figure 2-C. Original field monitoring data sheets are presented in Appendix 2-1.

The water level in the deep piezometer, MW-E, was significantly higher than the upper aquifer monitoring well adjacent to it (MW-F), indicating the presence of a vertical gradient within the upper-most aquifer. To obtain an estimate of the vertical gradient, the difference in water table elevation in each well is divided by the elevation change between the top of each screened interval in the two wells:

June, 1991	July, 1991	August, 1991,	October, 1991
.65'	2.43	.89'	.74'
----- = .008 ft/ft	----- = .028 ft/ft	----- = .010 ft/ft	----- = .009 ft/ft
85.34'	85.34'	85.34'	85.34'

Thus, the average vertical gradient is .014 ft/per foot of hydraulic head. Because the measured water level in the deep piezometer was higher than in the shallow well, the inferred vertical hydraulic gradient is upward, indicating the site is located in an area of ground water discharge. This observation is true year-round at YARL. The difference in head during the July, 1991 potentiometric levels in MW-E and MW-F appear to be anomalously high and may represent instrument or measurement error.

Data from MW-E was not used to construct Figures 1-A through 1-D because its position deep within the upper-most aquifer produces a head difference which would distort the contours in much the same manner as the incorrect MW-G readings in Figure 2-C. Data from MW-B was not used because measured water levels in this well have consistently produced anomalous apparent flow patterns (a surveying error is suspected).

4.0 Analytical Methods and Results

For a complete description of each analytical method, refer to the Project Plan and Sampling and Analysis Plan. In summary, each sample was analyzed for a variety of organic and inorganic contaminants including:

- TCL Volatile Organics EPA method 8240
- Chlorinated Pesticides EPA method 8080
- " Herbicides/Organophosphate Insecticides EPA methods 8150 and 8140
- " TCL Metals EPA Method 6010, 7444, 7000

Analytical results are presented in Appendix 2-2.

5.0 Interpretation of Results

5.1 TCL Volatile Organics

No volatile organics were detected in any of the 8 samples taken or in the trip blank or field blank samples. Full analytical results are presented in Appendix 2-2.

5.2 Pesticides, Herbicides and Insecticides

Of the 33 compounds analyzed for, none were detected in the 8 well samples. None were detected in the trip blank or field blank samples. Refer to Appendix 2-2.

5.3 TCL Metals

Detectable levels of some metals were recorded, however none of the concentrations exceed established EPA MCLs or ground water standards for the

state of Washington (WAC 173-200), and none appeared to depart significantly from previously-detected metal concentrations. Refer to Appendix 2-2.

No other contaminants of concern were identified during the final Post-closure monitoring event. Analytical methodology, chronology and a non-conformance summary appear in Appendix 2-2. Non-conformances were reported for the following:

1. Broken sample containers: 90042-1091-A1, E1 and Field Blank - no analysis
2. ~~Original sampling date, 8-16-91, samples arrived at lab warm; only metals analyzed.~~
3. Surrogate % recovery not reported for 8080 and 8150 analyses.

FIGURES

YARL Ground Water Level 6-13-91

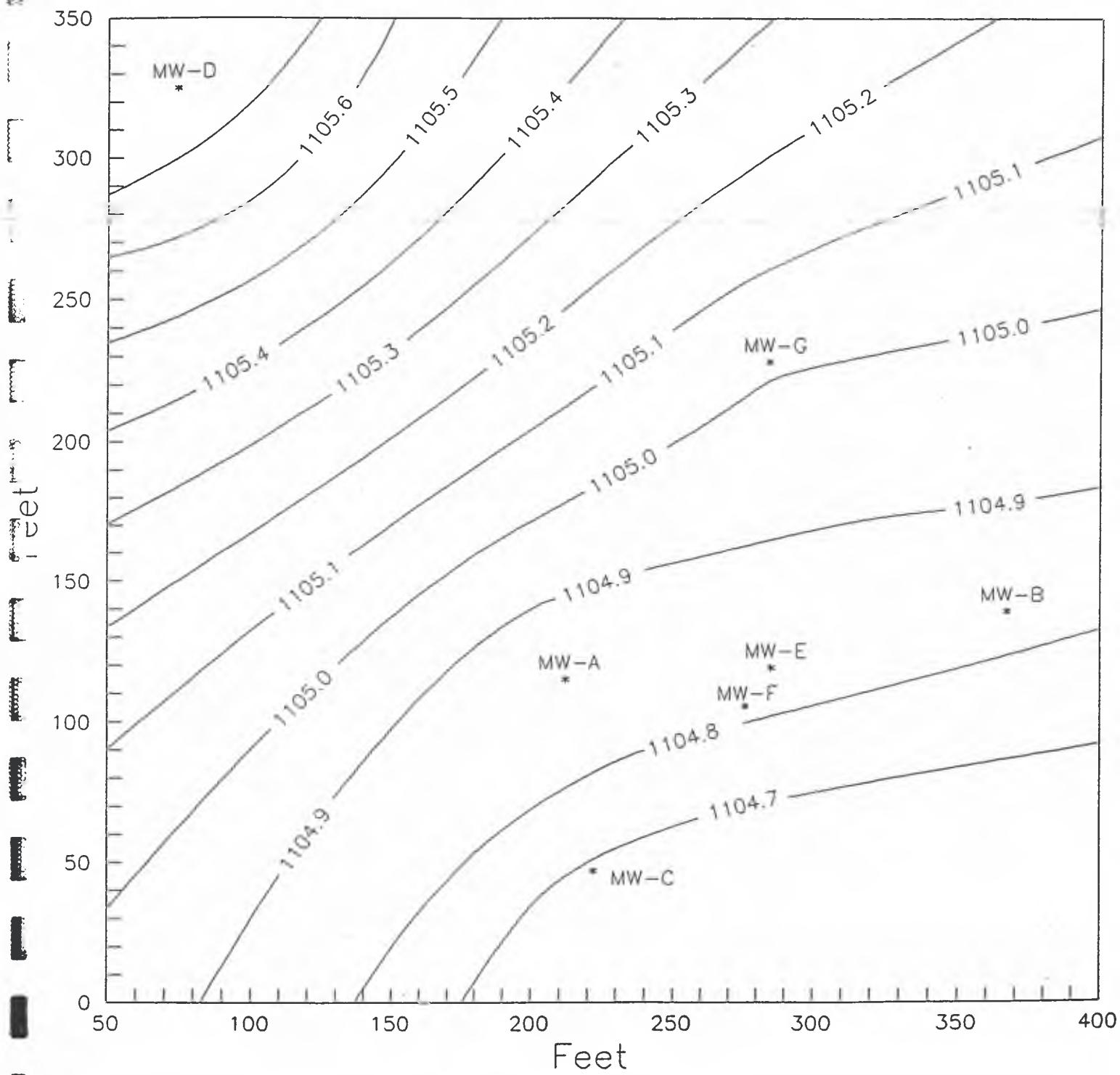


FIGURE 2-A

YARL Ground Water Level 7-16-91

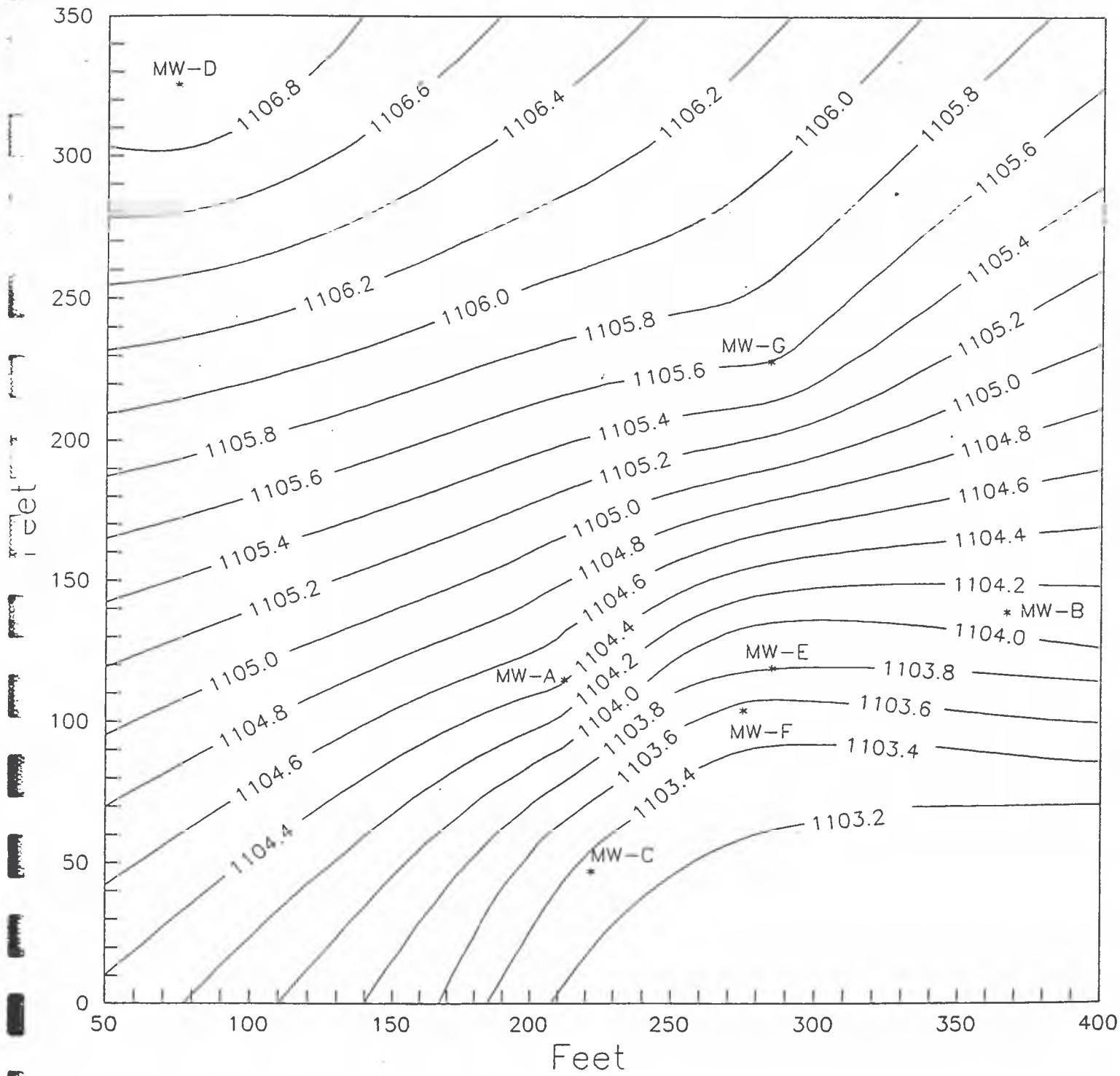


FIGURE 2-B

YARL Ground Water Level 8-16-91

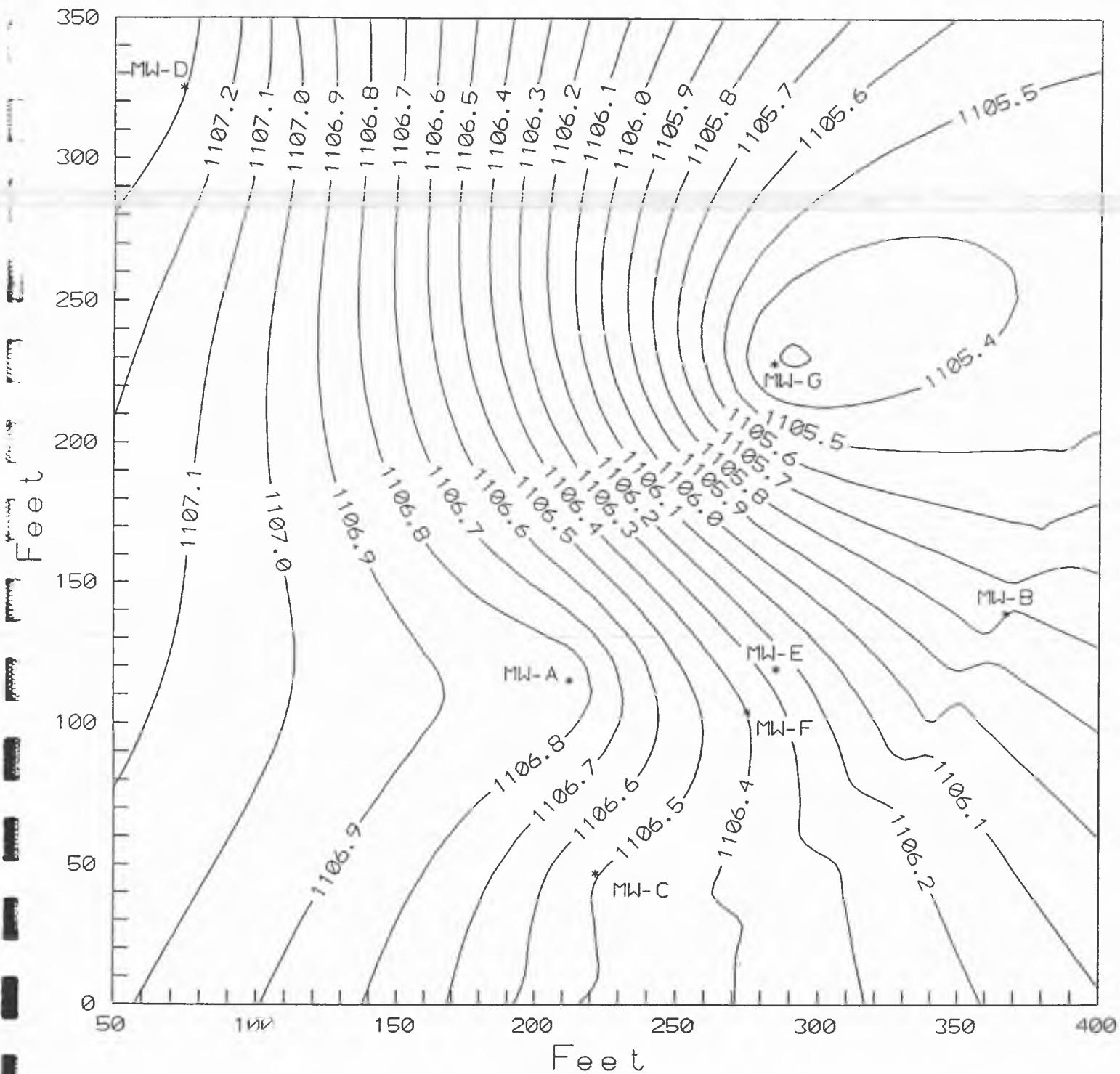


FIGURE 2-C

YARL Ground Water Level 10-1-91

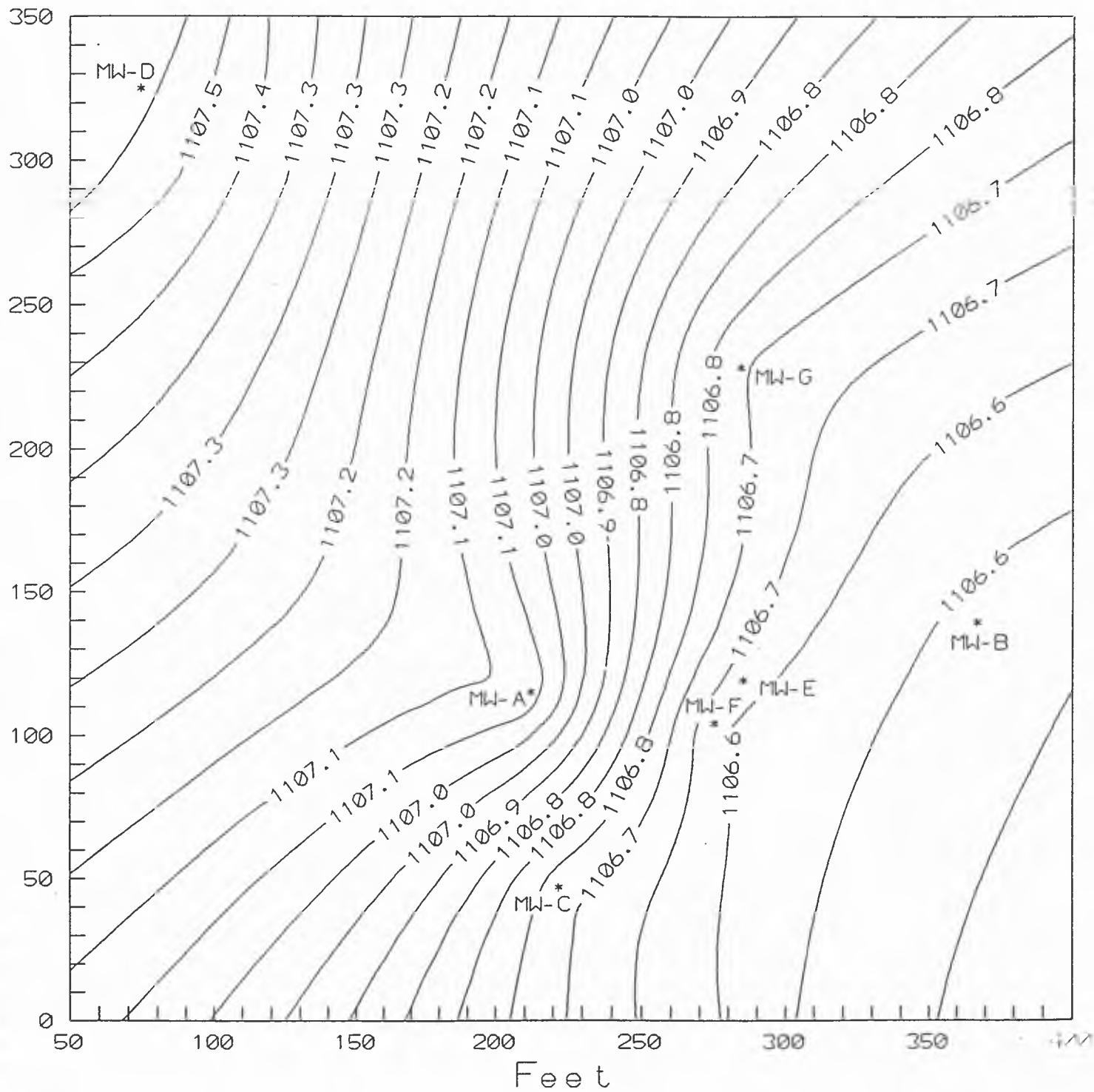


FIGURE 2-D

YARL Water Level Database

TOC	Elevations in Feet						
	MW-A	MW-B	MW-C	MW-D	MW-E	MW-F	MW-G
Jun-88	1141.54	1141.94	1140.98	1141.00	1141.03	1141.28	1142.43
Jul-88	1106.18	1106.36	1106.04	1107.19			
Aug-88	1106.43	1106.21	1106.23	1107.43			
Sep-88	1106.60	1106.78	1106.43	1107.66			
Dec-88	1106.59	1106.78	1106.50	1107.74			
Mar-89	1105.72	1105.90	1105.54	1106.71			
Jun-89	1105.16	1105.35	1104.98	1106.25			
Sep-89	1105.29	1105.48	1105.11	1106.40			
Mar-90	1106.57	1106.74	1106.37	1107.54			
25-Jun-90	1104.98	1105.14	1104.78	1106.06			
7-Aug-90	1105.47	1105.62	1105.33	1106.45	1106.49	1106.05	1105.69
4-Sep-90	1106.64	1106.70	1106.32	1107.32	1107.15	1106.13	1106.28
22-Oct-90	1106.33	1106.51	1106.13	1107.25	1106.82	1106.26	1106.48
14-Nov-90	1106.18	1106.34	1106.10	1107.05	1106.77	1106.18	1106.38
12-Dec-90	1106.86	1106.85	1106.51	1107.30	1107.39	1106.34	1106.52
3-Jan-91	1105.46	1105.64	1105.26	1106.27	1106.13	1105.38	1105.57
#20-Feb-91	1105.38	1105.33	*1105.08	1106.06	1105.91	1105.26	1105.38
13-Mar-91	1105.81	1105.79	1107.46	1106.40	1105.06	1106.79	1104.93
4-Apr-91	1105.65	1105.63	1105.37	1106.21	1106.36	1105.16	1105.23
6-May-91	1104.49	1104.64	1104.38	1105.60	1105.23	1104.43	1104.63
13-Jun-91	1104.57	1104.76	1104.43	1106.27	1105.29	1104.53	1104.75
16-Jul-91	1104.80	1105.02	1104.66	1105.80	1105.46	1104.81	1105.01
16-Aug-91	*1104.44	1105.64	1103.27	1107.00	1105.81	1103.38	1105.63
1-Oct-91	1106.89	1106.88	1106.49	1107.33	1107.20	1106.41	1105.27
	1107.09	1107.09	1106.72	1107.53	1107.35	1106.61	1106.70

- * Corrected value to average water level drop.
Original reading error.
- # Bad data. No contour map constructed for this date.

FIGURE 2-E

APPENDIX 2-1

FIELD MONITORING DATA SHEETS

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JUNE WATER LEVELS

FIELD MONITORING DATA SHEET

PROJECT NAME: YARL

PROJECT NUMBER: 90042

PAGE 1 OF 2

WEATHER: Sunny 80°F

LOCATION: 3706 W. Nob Hill
ADDRESS: YAKIMA
DATE: 6-13-91
CLIENT: USDA

WELL MONITORING

WELL NUM.	DATE/ TIME	WELL ELEV.	IMMISC. THICK.	TOTAL DEPTH	DEPTH TO H2O	WATER ELEV.	GALLONS IN WELL
D	6-13-91 1105	1141.0	N.A.	46'	35.2'	1105.80	
G	1111	1142.43	N.A.	50'	37.42'	1105.01	
B	11.15	1141.94	N.A.	47'	36.92'	1105.02	
A	11.27	1141.54	N.A.	42'	36.74'	1104.80	

WELL PURGING

WELL NUM.	DATE/ TIME	METHOD	# PORE VOL.	RINSE METH.	APPROX. FLOW, GPM	ELASPED T 95% EQ.

WELL SAMPLING

WELL NUM.	DATE/ TIME	SAMPLE NUMBER	250 ml AMBER	40 ml VOA	1 L GLASS	100 ml POLY	500 ml POLY	1 L POLY	1 GAL AMBER PLAST

INDICATOR PARAMETERS

WELL NUM.	DATE/ TIME	(AFTER STABILIZATION)			(AFTER SAMPLING)		
		TEMP	COND.	pH	TEMP	COND.	pH

COMMENTS:

(water level monitoring only)

NAME:

Pat Dunn

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JUNE WATER LEVELS

FIELD MONITORING DATA SHEET

PROJECT NAME: *Yak*
PROJECT NUMBER:
PAGE 2 OF 2

WEATHER:

LOCATION: 3706 W. Neb Hill
ADDRESS: Yakima, WA
DATE: 6-13-91
CLIENT: USDA

WELL MONITORING

WELL NUM.	DATE/ TIME	WELL ELEV.	IMMISC. THICK.	TOTAL DEPTH	DEPTH TO H2O	WATER ELEV.	GALLONS IN WELL
F	6-13-91 11:35	1141.28	N.A.	49'	36.47'	1104.81	
E	11:36	1143.93	N.A.	120'	55.57'	1105.46	
C	11:40	1140.98	N.A.	42'	36.32'	1104.66	

WELL PURGING

WELL NUM.	DATE/ TIME	METHOD	# PORE VOL.	APPROX. RINSE METH.	ELASPED T FLOW, GPM	95% EQ.

WELL SAMPLING

WELL NUM.	DATE/ TIME	SAMPLE NUMBER	250 ml AMBER	40 ml VOA	1 L GLASS	100 ml POLY	500 ml POLY	1 L POLY	1 GAL AMBER PLAST

INDICATOR PARAMETERS

WELL NUM.	DATE/ TIME	TEMP	(AFTER STABILIZATION) COND.	pH	TEMP	(AFTER SAMPLING) COND.	pH

COMMENTS:

NAME: *Pat Dunn*

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JULY '91 WATER LEVEL

FIELD MONITORING DATA SHEET

PROJECT NAME: YACINTH

PROJECT NUMBER: 90042

PAGE 1 OF 2

WEATHER: SUNNY 90°

LOCATION: 2706 W. NOG HILL BLVD.
ADDRESS: YACINTH, WA
DATE: 7-16-91
CLIENT: USDA

WELL MONITORING

WELL NUM.	DATE/ TIME	WELL ELEV.	IMMISC. THICK.	TOTAL DEPTH	DEPTH TO H2O	WATER ELEV.	GALLONS IN WELL
D	7-16-91 905	1141.0	N.A.		34.0	1107.00	
G	7-16	1142.43	N.A.		36.8	1105.63	
R	7-16	1141.94	N.A.		36.30	1105.64	
A	7-22	1141.54	N.A.		32.10	1109.44	

WELL PURGING

WELL NUM.	DATE/ TIME	METHOD	# PORE VOL.	APPROX. RINSE METH.	ELASPED T FLOW, GPM	95% EQ.

WELL SAMPLING

WELL NUM.	DATE/ TIME	SAMPLE NUMBER	250 ml	40 ml	1 L	100 ml	500 ml	1 L	1 GAL AMBER PLAST
		AMBER	VOA	GLASS	POLY	POLY	POLY	AMBER	

INDICATOR PARAMETERS

WELL NUM.	DATE/ TIME	TEMP	(AFTER STABILIZATION) COND.	pH	TEMP	(AFTER SAMPLING) COND.	pH

COMMENTS: (water level monitoring only)

NAME: STEVE DIAZOS

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JULY '91 WATER

FIELD MONITORING DATA SHEET

PROJECT NAME: YACIMA

PROJECT NUMBER: 90042

PAGE 2 OF 2

WEATHER: SUNNY 90°

LOCATION: 3706 W. NOB HILL
ADDRESS: YACIMA, WA.
DATE: 7-16-91
CLIENT: USDA

WELL MONITORING

WELL NUM.	DATE/ TIME	WELL ELEV.	IMMISC. THICK.	TOTAL DEPTH	DEPTH TO H2O	WATER ELEV.	GALLONS IN WELL
F	7-16-91 9:30	1141.28	N.A.		37.90	1103.38	
-	7-16-91 9:34	1141.03	N.A.		36.22	1105.81	
C	9:39	1140.98	N.A.		37.71	1103.27	

WELL PURGING

WELL NUM.	DATE/ TIME	METHOD	# PORE VOL.	APPROX. RINSE FLOW, GPM	ELASPED T 95% EQ.

WELL SAMPLING

WELL NUM.	DATE/ TIME	SAMPLE NUMBER	250 ml AMBER	40 ml VOA	1 L GLASS	100 ml POLY	500 ml POLY	1 L POLY	1 GAL AMBER PLAST

INDICATOR PARAMETERS

WELL NUM.	DATE/ TIME	TEMP	(AFTER STABILIZATION)		TEMP	(AFTER SAMPLING)	
			COND.	pH		COND.	pH

COMMENTS:

NAME:

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FIELD MONITORING DATA SHEET

PROJECT NAME:

PROJECT NUMBER:

PAGE / OF 2

WEATHER: HOT

LOCATION: YACO

ADDRESS:

DATE:

8-16-91
USDA

WELL MONITORING

WELL NUM.	DATE/ TIME	WELL ELEV.	IMMISC. THICK.	TOTAL DEPTH	DEPTH TO H ₂ O	WATER ELEV.	GALLONS IN WELL
A	8-16-91	1141.54	N/A	/	34.65	1106.89	
B	"	1141.94	"	/	35.06	1106.28	
C	"	1141.94	"	/	34.17	1106.17	
D	"	1141.00	"	/	33.67	1107.37	

WELL PURGING

WELL NUM.	DATE/ TIME	METHOD	# PORE VOL.	APPROX. RINSE FLOW, GPM	ELASPED T 95% EQ.

WELL SAMPLING

WELL NUM.	DATE/ TIME	SAMPLE NUMBER	250 ml AMBER	40 ml VOA	1 L GLASS	100 ml POLY	500 ml POLY	1 L POLY	1 GAL AMBER PLAST

INDICATOR PARAMETERS

WELL NUM.	DATE/ TIME	(AFTER STABILIZATION)			(AFTER SAMPLING)		
		TEMP	COND.	PH	TEMP	COND.	PH

COMMENTS:

Taken by R Thompson of SE/E

NAME: D Geller

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FIELD MONITORING DATA SHEET

PROJECT NAME: YALL

PROJECT NUMBER:

PAGE 2 OF 2

WEATHER: HOT

LOCATION: YALL

ADDRESS:

DATE:

CLIENT: 8-16-91
USDA

WELL MONITORING

WELL NUM.	DATE/ TIME	WELL ELEV.	IMMISC. THICK.	TOTAL DEPTH	DEPTH TO H2O	WATER ELEV.	GALLONS IN WELL
E	8-16-91	1141.03	N/A	/	33.83	1107.2	
F	"	1141.28	"	/	34.87	1106.41	
G	"	1141.63	-	/	35.96	1105.27	

WELL PURGING

WELL NUM.	DATE/ TIME	METHOD	# PORE VOL.	APPROX. RINSE METH.	ELASPED T FLOW, GPM	95% EQ.

WELL SAMPLING

WELL NUM.	DATE/ TIME	SAMPLE NUMBER	250 ml AMBER	40 ml VOA	1 L GLASS	100 ml POLY	500 ml POLY	1 L POLY	1 GAL AMBER PLAST

INDICATOR PARAMETERS

WELL NUM.	DATE/ TIME	(AFTER STABILIZATION)			(AFTER SAMPLING)		
		TEMP	COND.	pH	TEMP	COND.	pH

COMMENTS:

R. Thompson of SE/E took w.l. data

NAME: D. Bell

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FIELD MONITORING DATA SHEET

PROJECT NAME: Yael
PROJECT NUMBER: 90042
PAGE 1 OF 2

WEATHER: cloudy 75°

LOCATION: Yael
ADDRESS: 3706 W. Nob Hill
DATE: 10-1-91
CLIENT: USDA

WELL MONITORING

WELL NUM.	DATE/ TIME	WELL ELEV.	IMMISC. THICK.	TOTAL DEPTH	DEPTH TO H2O	WATER ELEV.	GALLONS IN WELL
D	10-1-91 800	1141.00	N/A	46	33.47	1107.53	2.25
G	804	1142.43	N/A	38 ??	35.73	1106.70	1.50
B	804	1141.94	N/A	47	34.83	1107.04	2.25
A	813	1141.54	N/A	42	34.45	1107.09	1.50

WELL PURGING

WELL NUM.	DATE/ TIME	METHOD	# PORE VOL.	RINSE METH.	APPROX. FLOW, GPM	ELASPED T 95% EQ.
D	10-1-91 0900	Well Wizard	3	N/A	<1	<5 MIN.
G	0935	"	3	"	<1	<5
B	0950	"	3	"	<1	<5
A	1015	"	3	"	<1	<5

WELL SAMPLING

WELL NUM.	DATE/ TIME	SAMPLE NUMBER	250 ml AMBER	40 ml VOA	1 L GLASS	100 ml POLY	500 ml POLY	1 L POLY	1 GAL AMBER PLAST
D	0900	90042 1091 D1D2	8080 8140/50	2					
G	0935	1091 G1	8080 8140/50	✓					
B	0950	1091 B1	8080 8140/50	✓					
A	1015	1091 A1	8080 8140/50	✓					

INDICATOR PARAMETERS

WELL NUM.	DATE/ TIME	(AFTER STABILIZATION)			(AFTER SAMPLING)		
		TEMP	COND.	pH	TEMP	COND.	pH
D	0900	15	948	8.81			
G	935	15	912	7.43			
B	950	14	1053	7.47			
A	1015	15	901	7.53			

COMMENTS: D2 * Duplicate this round (QA/QC)

Taken by R. Thompson or SE/E

Note: Metals fallen in August
(8-16-91)

FINAL QUARTERLY SAMPLING

NAME: Doug Goller

HONG WEST & ASSOCIATES

• Geotechnical Engineering • Hydrogeology • Materials Testing • Construction Inspection •

FIELD MONITORING DATA SHEET

PROJECT NAME:

PROJECT NUMBER:

PAGE 2 OF 2

WEATHER: Cloudy 75°

LOCATION: YACI

ADDRESS:

DATE: 10-1-91

CLIENT: USDA

WELL MONITORING

WELL NUM.	DATE/ TIME	WELL ELEV.	IMMISC. THICK.	TOTAL DEPTH	DEPTH TO H2O	WATER ELEV.	GALLONS IN WELL
F	817	1141.28	N/A	49	34.67	1106.61	2.5
E	920	1141.03	N/A	12.5	33.68	1107.35	15.75
C	823	1140.98	N/A	42	34.26	1106.72	1.25

WELL PURGING

WELL NUM.	DATE/ TIME	METHOD	# PORE VOL.	APPROX. RINSE FLOW, GPM	ELASPED T 95% EQ.
F	10-1-91 1050	Well Wizard	3	1/4	<5
E	1200	"	11	"	<5
C	1230	"	11	"	<1

WELL SAMPLING

WELL NUM.	DATE/ TIME	SAMPLE NUMBER	250 ml AMBER	40 ml VOA	1 L GLASS	100 ml POLY	500 ml POLY	1 L POLY	1 GAL AMBER PLAST
F	10-1-91 1050	90042- 1091-F1	8080 014015n	✓					
E	1200	1091-F1	"	✓					
C	1230	1091-C1	"	✓					

INDICATOR PARAMETERS

WELL NUM.	DATE/ TIME	(AFTER STABILIZATION)			(AFTER SAMPLING)		
		TEMP	COND.	pH	TEMP	COND.	pH
F	10-1-91 1050	15	859	7.53			
E	1200	15	661	7.66			
C	1230	15	861	7.56			

COMMENTS:

Sampled by R. Thompson, SE/ER

Note: Metals taken 8/16/91

NAME: DeGelle

APPENDIX 2-2

ORIGINAL LABORATORY DATA AND CHAIN OF CUSTODY



BIOSPHERICS® INCORPORATED

Technologies for Environment and Health

October 22, 1991

RECEIVED

Mr. Doug Geller
Hong West & Associates
157 Yesler Way
Suite 505
Seattle, Washington 98104

OCT 25 1991

HONG WEST & ASSOC.

RE: Lab # 91-10-0205

Dear Mr. Geller:

Enclosed please find the results from analyses performed on recently received samples.

If you have any questions concerning the results, please do not hesitate to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "PJO".

Philippe Ourisson
Manager
Analytical Laboratory

PO:rg
enclosure

Corporate Headquarters

12051 Indian Creek Court
Beltsville, Maryland 20705
(301) 369-3900
Telefax (301) 725-4908/09

Cumberland Regional Office

Crossroads Venture Center
Three Commerce Drive
Cumberland, Maryland 21502
(301) 722-9100
Telefax (301) 722-9103

BIOSPHERICS INCORPORATED

CLIENT: Hong West

DATE COLLECTED: October 1, 1991

DATE RECEIVED: October 2, 1991

MATRIX: Water

LAB I.D.: 91-10-0205

Analytical Methodology/Sample Chronicle

<u>Parameter</u>	<u>Method</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
Pesticides/PCB's	EPA 8080	10/05/91	10/08-09/91
Organophosphorus Pesticides	EPA 8140	10/07/91	10/11-18/91
Volatile Organics	EPA 8240		10/10/91
Herbicides	EPA 8150	10/07/91	10/09/91

Non-conformance Summary

Sample containers 90042-1091-A1,E1 and field blank for 8080,8140 and 8150 were received broken therefore could not be retrieved. Notified client, and at client's request the analyses were cancelled.

ORGANIC ANALYSIS DATA SHEET
PESTICIDE/PCBs

LAB NAME:	Biospherics Inc.	MATRIX:	Water
CASE No.:	91100205	UNITS:	$\mu\text{g/L}$
LAB No.:	1	DATE COLLECTED:	10/01/91
CLIENT NAME:	Hong West	DATE RECEIVED:	10/02/91
CLIENT I.D.:	90042-1091-D1	DATE EXTRACTED:	10/05/91
REFERENCED METHOD:	EPA 8080	DATE ANALYZED:	10/8-9/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
319-84-6	Alpha-BHC	BQL	0.02
319-87-7	Beta-BHC	BQL	0.02
319-86-8	Delta-BHC	BQL	0.02
58-89-9	Lindane	BQL	0.02
76-44-8	Heptachlor	BQL	0.02
309-00-2	Aldrin	BQL	0.02
1024-57-3	Heptachlor Epoxide	BQL	0.02
959-98-8	Endosulfan I	BQL	0.02
60-57-1	Dieldrin	BQL	0.02
75-55-9	4,4'-DDE	BQL	0.02
72-20-8	Endrin	BQL	0.02
33213-65-9	Endosulfan II	BQL	0.02
72-54-8	4,4'-DDD	BQL	0.02
1031-07-8	Endosulfan Sulfate	BQL	0.02
50-29-3	4,4'-DDT	BQL	0.02
72-43-5	Methoxychlor	BQL	0.02
7421-93-4	Endrin Aldehyde	BQL	0.02
57-74-9	Chlordane	BQL	0.16
8001-35-2	Toxaphene	BQL	1.0
12674-11-2	Aroclor-1016	BQL	0.2
11104-28-2	Aroclor-1221	BQL	0.2
11141-16-5	Aroclor-1232	BQL	0.2
53469-21-9	Aroclor-1242	BQL	0.2
12672-29-6	Aroclor-1248	BQL	0.2
11097-69-1	Aroclor-1254	BQL	0.2
11096-82-5	Aroclor-1260	BQL	0.2

BQL - Below Practical Quantitation Limit
All results qualitatively confirmed by second column

ORGANIC ANALYSIS DATA SHEET
PESTICIDE/PCBs

LAB NAME:	Biospherics Inc.	MATRIX:	Water
CASE No.:	91100205	UNITS:	$\mu\text{g/L}$
LAB No.:	2	DATE COLLECTED:	10/01/91
CLIENT NAME:	Hong West	DATE RECEIVED:	10/02/91
CLIENT I.D.:	90042-1091-D2	DATE EXTRACTED:	10/05/91
REFERENCED METHOD:	EPA 8080	DATE ANALYZED:	10/8-9/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
319-84-6	Alpha-BHC	BQL	0.02
319-87-7	Beta-BHC	BQL	0.02
319-86-8	Delta-BHC	BQL	0.02
58-89-9	Lindane	BQL	0.02
76-44-8	Heptachlor	BQL	0.02
309-00-2	Aldrin	BQL	0.02
1024-57-3	Heptachlor Epoxide	BQL	0.02
959-98-8	Endosulfan I	BQL	0.02
60-57-1	Dieldrin	BQL	0.02
75-55-9	4,4'-DDE	BQL	0.02
72-20-8	Endrin	BQL	0.02
33213-65-9	Endosulfan II	BQL	0.02
72-54-8	4,4'-DDD	BQL	0.02
1031-07-8	Endosulfan Sulfate	BQL	0.02
50-29-3	4,4'-DDT	BQL	0.02
72-43-5	Methoxychlor	BQL	0.02
7421-93-4	Endrin Aldehyde	BQL	0.02
57-74-9	Chlordane	BQL	0.16
8001-35-2	Toxaphene	BQL	1.0
12674-11-2	Aroclor-1016	BQL	0.2
11104-28-2	Aroclor-1221	BQL	0.2
11141-16-5	Aroclor-1232	BQL	0.2
53469-21-9	Aroclor-1242	BQL	0.2
12672-29-6	Aroclor-1248	BQL	0.2
11097-69-1	Aroclor-1254	BQL	0.2
11096-82-5	Aroclor-1260	BQL	0.2

BQL - Below Practical Quantitation Limit
All results qualitatively confirmed by second column

ORGANIC ANALYSIS DATA SHEET
PESTICIDE/PCBs

LAB NAME:	Biospherics Inc.	MATRIX:	Water
CASE No.:	91100205	UNITS:	$\mu\text{g/L}$
LAB No.:	3	DATE COLLECTED:	10/01/91
CLIENT NAME:	Hong West	DATE RECEIVED:	10/02/91
CLIENT ID.:	90042-1091-G1	DATE EXTRACTED:	10/05/91
REFERENCED METHOD:	EPA 8080	DATE ANALYZED:	10/8-9/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
319-84-6	Alpha-BHC	BQL	0.02
319-87-7	Beta-BHC	BQL	0.02
319-86-8	Delta-BHC	BQL	0.02
58-89-9	Lindane	BQL	0.02
76-44-8	Heptachlor	BQL	0.02
309-00-2	Aldrin	BQL	0.02
1024-57-3	Heptachlor Epoxide	BQL	0.02
959-98-8	Endosulfan I	BQL	0.02
60-57-1	Dieldrin	BQL	0.02
75-55-9	4,4'-DDE	BQL	0.02
72-20-8	Endrin	BQL	0.02
33213-65-9	Endosulfan II	BQL	0.02
72-54-8	4,4'-DDD	BQL	0.02
1031-07-8	Endosulfan Sulfate	BQL	0.02
50-29-3	4,4'-DDT	BQL	0.02
72-43-5	Methoxychlor	BQL	0.02
7421-93-4	Endrin Aldehyde	BQL	0.02
57-74-9	Chlordane	BQL	0.16
8001-35-2	Toxaphene	BQL	1.0
12674-11-2	Aroclor-1016	BQL	0.2
11104-28-2	Aroclor-1221	BQL	0.2
11141-16-5	Aroclor-1232	BQL	0.2
53469-21-9	Aroclor-1242	BQL	0.2
12672-29-6	Aroclor-1248	BQL	0.2
11097-69-1	Aroclor-1254	BQL	0.2
11096-82-5	Aroclor-1260	BQL	0.2

BQL - Below Practical Quantitation Limit
All results qualitatively confirmed by second column

ORGANIC ANALYSIS DATA SHEET
PESTICIDE/PCBs

LAB NAME:	Biospherics Inc.	MATRIX:	Water
CASE No.:	91100205	UNITS:	$\mu\text{g/L}$
LAB No.:	4	DATE COLLECTED:	10/01/91
CLIENT NAME:	Hong West	DATE RECEIVED:	10/02/91
CLIENT I.D.:	90042-1091-B1	DATE EXTRACTED:	10/05/91
REFERENCED METHOD:	EPA 8080	DATE ANALYZED:	10/8/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
319-84-6	Alpha-BHC	BQL	0.02
319-87-7	Beta-BHC	BQL	0.02
319-86-8	Delta-BHC	BQL	0.02
58-89-9	Lindane	BQL	0.02
76-44-8	Heptachlor	BQL	0.02
309-00-2	Aldrin	BQL	0.02
1024-57-3	Heptachlor Epoxide	BQL	0.02
959-98-8	Endosulfan I	BQL	0.02
60-57-1	Dieldrin	BQL	0.02
75-55-9	4,4'-DDE	BQL	0.02
72-20-8	Endrin	BQL	0.02
33213-65-9	Endosulfan II	BQL	0.02
72-54-8	4,4'-DDD	BQL	0.02
1031-07-8	Endosulfan Sulfate	BQL	0.02
50-29-3	4,4'-DDT	BQL	0.02
72-43-5	Methoxychlor	BQL	0.02
7421-93-4	Endrin Aldehyde	BQL	0.02
57-74-9	Chlordane	BQL	0.16
8001-35-2	Toxaphene	BQL	1.0
12674-11-2	Aroclor-1016	BQL	0.2
11104-28-2	Aroclor-1221	BQL	0.2
11141-16-5	Aroclor-1232	BQL	0.2
53469-21-9	Aroclor-1242	BQL	0.2
12672-29-6	Aroclor-1248	BQL	0.2
11097-69-1	Aroclor-1254	BQL	0.2
11096-82-5	Aroclor-1260	BQL	0.2

BQL - Below Practical Quantitation Limit
All results qualitatively confirmed by second column

ORGANIC ANALYSIS DATA SHEET
PESTICIDE/PCBs

LAB NAME:	Biospherics Inc.	MATRIX:	Water
CASE No.:	91100205	UNITS:	$\mu\text{g/L}$
LAB No.:	5	DATE COLLECTED:	10/01/91
CLIENT NAME:	Hong West	DATE RECEIVED:	10/02/91
CLIENT I.D.:	90042-1091-F1	DATE EXTRACTED:	10/05/91
REFERENCED METHOD:	EPA 8080	DATE ANALYZED:	10/8-9/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
319-84-6	Alpha-BHC	BQL	0.02
319-87-7	Beta-BHC	BQL	0.02
319-86-8	Delta-BHC	BQL	0.02
58-89-9	Lindane	BQL	0.02
76-44-8	Heptachlor	BQL	0.02
309-00-2	Aldrin	BQL	0.02
1024-57-3	Heptachlor Epoxide	BQL	0.02
959-98-8	Endosulfan I	BQL	0.02
60-57-1	Dieldrin	BQL	0.02
75-55-9	4,4'-DDE	BQL	0.02
72-20-8	Endrin	BQL	0.02
33213-65-9	Endosulfan II	BQL	0.02
72-54-8	4,4'-DDD	BQL	0.02
1031-07-8	Endosulfan Sulfate	BQL	0.02
50-29-3	4,4'-DDT	BQL	0.02
72-43-5	Methoxychlor	BQL	0.02
7421-93-4	Endrin Aldehyde	BQL	0.02
57-74-9	Chlordane	BQL	0.16
8001-35-2	Toxaphene	BQL	1.0
12674-11-2	Aroclor-1016	BQL	0.2
11104-28-2	Aroclor-1221	BQL	0.2
11141-16-5	Aroclor-1232	BQL	0.2
53469-21-9	Aroclor-1242	BQL	0.2
12672-29-6	Aroclor-1248	BQL	0.2
11097-69-1	Aroclor-1254	BQL	0.2
11096-82-5	Aroclor-1260	BQL	0.2

BQL - Below Practical Quantitation Limit
All results qualitatively confirmed by second column

ORGANIC ANALYSIS DATA SHEET
PESTICIDE/PCBs

LAB NAME:	Biospherics Inc.	MATRIX:	Water
CASE No.:	91100205	UNITS:	$\mu\text{g/L}$
LAB No.:	6	DATE COLLECTED:	10/01/91
CLIENT NAME:	Hong West	DATE RECEIVED:	10/02/91
CLIENT I.D.:	90042-1091-C1	DATE EXTRACTED:	10/05/91
REFERENCED METHOD:	EPA 8080	DATE ANALYZED:	10/8-9/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
319-84-6	Alpha-BHC	BQL	0.02
319-87-7	Beta-BHC	BQL	0.02
319-86-8	Delta-BHC	BQL	0.02
58-89-9	Lindane	BQL	0.02
76-44-8	Heptachlor	BQL	0.02
309-00-2	Aldrin	BQL	0.02
1024-57-3	Heptachlor Epoxide	BQL	0.02
959-98-8	Endosulfan I	BQL	0.02
60-57-1	Dieldrin	BQL	0.02
75-55-9	4,4'-DDE	BQL	0.02
72-20-8	Endrin	BQL	0.02
33213-65-9	Endosulfan II	BQL	0.02
72-54-8	4,4'-DDD	BQL	0.02
1031-07-8	Endosulfan Sulfate	BQL	0.02
50-29-3	4,4'-DDT	BQL	0.02
72-43-5	Methoxychlor	BQL	0.02
7421-93-4	Endrin Aldehyde	BQL	0.02
57-74-9	Chlordane	BQL	0.16
8001-35-2	Toxaphene	BQL	1.0
12674-11-2	Aroclor-1016	BQL	0.2
11104-28-2	Aroclor-1221	BQL	0.2
11141-16-5	Aroclor-1232	BQL	0.2
53469-21-9	Aroclor-1242	BQL	0.2
12672-29-6	Aroclor-1248	BQL	0.2
11097-69-1	Aroclor-1254	BQL	0.2
11096-82-5	Aroclor-1260	BQL	0.2

BQL - Below Practical Quantitation Limit
All results qualitatively confirmed by second column

ORGANIC ANALYSIS DATA SHEET
ORGANOPHOSPHORUS PESTICIDES

LAB NAME: Biospherics Inc.

MATRIX: Water

CASE No.: 91-10-0205

UNITS: $\mu\text{g/L}$

LAB No.: 1

DATE COLLECTED: 10/01/91

CLIENT NAME: Hong West & Associates

DATE RECEIVED: 10/02/91

CLIENT ID: 90042.1091.D1

DATE EXTRACTED: 10/11/91

REFERENCED METHOD: EPA 8140

DATE ANALYZED: 10/11,18/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
107-49-3	TEPP	BQL	5.0
2600-69-3	Phorate	BQL	0.2
298-04-4	Disulfoton	BQL	0.2
298-00-0	Methyl Parathion	BQL	0.2
121-75-5	Malathion	BQL	0.2
2921-88-2	Dursban	BQL	0.2
56-38-2	Ethyl Parathion	BQL	0.2
333-41-5	Diazinon	BQL	0.2
55-38-9	Fenthion	BQL	0.2
86-50-0	Azinophos-methyl	BQL	0.8
311-45-5	Paraoxon	BQL	2.0

Surrogate % Rec. 100

BQL - Below Practical Quantitation Limit

ORGANIC ANALYSIS DATA SHEET
ORGANOPHOSPHORUS PESTICIDES

LAB NAME: Biospherics Inc.

MATRIX: Water

CASE No.: 91-10-0205

UNITS: $\mu\text{g/L}$

LAB No.: 2

DATE COLLECTED: 10/01/91

CLIENT NAME: Hong West & Associates

DATE RECEIVED: 10/02/91

CLIENT I.D.: 90042-1091-D2

DATE EXTRACTED: 10/07/91

REFERENCED METHOD: EPA 8140

DATE ANALYZED: 10/11,18/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
107-49-3	TEPP	BQL	5.0
2600-69-3	Phorate	BQL	0.2
298-04-4	Disulfoton	BQL	0.2
298-00-0	Methyl Parathion	BQL	0.2
121-75-5	Malathion	BQL	0.2
2921-88-2	Dursban	BQL	0.2
56-38-2	Ethyl Parathion	BQL	0.2
333-41-5	Diazinon	BQL	0.2
55-38-9	Fenthion	BQL	0.2
86-50-0	Azinophos-methyl	BQL	0.8
311-45-5	Paraoxon	BQL	2.0

Surrogate % Rec. 97

BQL - Below Practical Quantitation Limit

ORGANIC ANALYSIS DATA SHEET
ORGANOPHOSPHORUS PESTICIDES

LAB NAME: Biospherics Inc.

MATRIX: Water

CASE No.: 91-10-0205

UNITS: $\mu\text{g/L}$

LAB No.: 3

DATE COLLECTED: 10/01/91

CLIENT NAME: Hong West & Associates

DATE RECEIVED: 10/02/91

CLIENT ID.: 90042-1091-G1

DATE EXTRACTED: 10/07/91

REFERENCED METHOD: EPA 8140

DATE ANALYZED: 10/11,18/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
107-49-3	TEPP	BQL	5.0
2600-69-3	Phorate	BQL	0.2
298-04-4	Disulfoton	BQL	0.2
298-00-0	Methyl Parathion	BQL	0.2
121-75-5	Malathion	BQL	0.2
2921-88-2	Dursban	BQL	0.2
56-38-2	Ethyl Parathion	BQL	0.2
333-41-5	Diazinon	BQL	0.2
55-38-9	Fenthion	BQL	0.2
86-50-0	Azinophos-methyl	BQL	0.8
311-45-5	Paraoxon	BQL	2.0

Surrogate % Rec. 100

BQL - Below Practical Quantitation Limit

ORGANIC ANALYSIS DATA SHEET
ORGANOPHOSPHORUS PESTICIDES

LAB NAME: Biospherics Inc.

MATRIX: Water

CASE No.: 91-10-0205

UNITS: $\mu\text{g/L}$

LAB No.: 4

DATE COLLECTED: 10/01/91

CLIENT NAME: Hong West & Associates

DATE RECEIVED: 10/02/91

CLIENT ID: QM042-1001-R1

DATE EXTRACTED: 10/17/91

REFERENCED METHOD: EPA 8140

DATE ANALYZED: 10/11,18/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
107-49-3	TEPP	BQL	5.0
2600-69-3	Phorate	BQL	0.2
298-04-4	Disulfoton	BQL	0.2
298-00-0	Methyl Parathion	BQL	0.2
121-75-5	Malathion	BQL	0.2
2921-88-2	Dursban	BQL	0.2
56-38-2	Ethyl Parathion	BQL	0.2
333-41-5	Diazinon	BQL	0.2
55-38-9	Fenthion	BQL	0.2
86-50-0	Azinophos-methyl	BQL	0.8
311-45-5	Paraoxon	BQL	2.0

Surrogate % Rec. 97

BQL - Below Practical Quantitation Limit

ORGANIC ANALYSIS DATA SHEET
ORGANOPHOSPHORUS PESTICIDES

LAB NAME: Biospherics Inc.

MATRIX: Water

CASE No.: 91-10-0205

UNITS: $\mu\text{g/L}$

LAB No.: 5

DATE COLLECTED: 10/01/91

CLIENT NAME: Hong West & Associates

DATE RECEIVED: 10/02/91

CLIENT I.D.: 90042-1091-F1

DATE EXTRACTED: 10/07/91

REFERENCED METHOD: EPA 8140

DATE ANALYZED: 10/11,18/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
107-49-3	TEPP	BQL	5.0
2600-69-3	Phorate	BQL	0.2
298-04-4	Disulfoton	BQL	0.2
298-00-0	Methyl Parathion	BQL	0.2
121-75-5	Malathion	BQL	0.2
2921-88-2	Dursban	BQL	0.2
56-38-2	Ethyl Parathion	BQL	0.2
333-41-5	Diazinon	BQL	0.2
55-38-9	Fenthion	BQL	0.2
86-50-0	Azinophos-methyl	BQL	0.8
311-45-5	Paraoxon	BQL	2.0

Surrogate % Rec. 98

BQL - Below Practical Quantitation Limit

**ORGANIC ANALYSIS DATA SHEET
ORGANOPHOSPHORUS PESTICIDES**

LAB NAME: Biospherics Inc.

MATRIX: Water

CASE No.: 91-10-0205

UNITS: $\mu\text{g/L}$

LAB No.: 6

DATE COLLECTED: 10/01/91

CLIENT NAME: Hong West & Associates

DATE RECEIVED: 10/02/91

CLIENT I.D.: 90042-1091-C1

DATE EXTRACTED: 10/07/91

REFERENCED METHOD: EPA 8140

DATE ANALYZED: 10/11,18/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
107-49-3	TEPP	BQL	5.0
2600-69-3	Phorate	BQL	0.2
298-04-4	Disulfoton	BQL	0.2
298-00-0	Methyl Parathion	BQL	0.2
121-75-5	Malathion	BQL	0.2
2921-88-2	Dursban	BQL	0.2
56-38-2	Ethyl Parathion	BQL	0.2
333-41-5	Diazinon	BQL	0.2
55-38-9	Fenthion	BQL	0.2
86-50-0	Azinophos-methyl	BQL	0.8
311-45-5	Paraoxon	BQL	2.0

Surrogate % Rec. 100

BQL - Below Practical Quantitation Limit

BIOSPHERICS
VOLATILES ANALYSIS REPORT
REFERENCED METHOD:8240

Data File: >BK172::D2
 Lab. No: 91100205-1
 Matrix: WATER
 Instrument ID: GC/MS:B(HP5970)

Client ID: H-W & ASSOCIATES(90042-1091-D1)
 Date Collected: 10/01/91
 Date Analyzed: 10/10/91 16:45

CAS #	Compound Name	Conc(ug/L)	CAS #	Compound Name	Conc(ug/L)
74-87-3	Chloromethane	10. N	75-27-4	Bromodichloromethane	5. N
74-83-9	Bromomethane	10. N	78-87-5	1,2-Dichloropropane	5. N
75-01-4	Vinyl Chloride	10. N	100061-01-5	cis-1,3-Dichloropropene	5. N
75-00-3	Chloroethane	10. N	79-01-6	Trichloroethene	5. N
75-09-2	Methylene Chloride	5. N	124-48-1	Dibromochloromethane	5. N
67-64-1	Acetone	100. N	79-00-5	1,1,2-Trichloroethane	5. N
75-69-4	Trichlorofluoromethane	5. N	71-43-2	Benzene	5. N
75-15-0	Carbon Disulfide	5. N	10061-02-6	trans-1,3-Dichloropropene	5. N
107-02-8	Acrolein	50. N	110-75-8	2-Chloroethyl vinyl ether	10. N
107-13-1	Acrylonitrile	50. N	75-25-2	Bromform	5. N
75-35-4	1,1-Dichloroethene	5. N	108-10-1	4-Methyl-2-Pentanone	50. N
75-34-3	1,1-Dichloroethane	5. N	591-78-6	2-Hexanone	50. N
540-59-0	trans-1,2-Dichloroethene	5. N	127-18-4	Tetrachloroethene	5. N
67-66-3	Chloroform	5. N	79-34-5	1,1,2,2-Tetrachloroethane	5. N
107-06-2	1,2-Dichloroethane	5. N	108-88-3	Toluene	5. N
78-93-3	2-Butanone	100. N	108-90-7	Chlorobenzene	5. N
71-55-6	1,1,1-Trichloroethane	5. N	100-41-4	Ethylbenzene	5. N
56-23-5	Carbon Tetrachloride	5. N	100-42-5	Styrene	5. N
108-05-4	Vinyl Acetate	10. N	1330-20-7	Total Xylenes	5. N

Qualifier descriptions: N - Compound analyzed for but not detected.
 Number reported is the detection limit.
 * - Compound is present but less than detection limit. Should be considered an approximation.

BIOSPHERICS
VOLATILES ANALYSIS REPORT
REFERENCED METHOD:8240

Data File: >BK173::D2
 Lab. No: 91100205-2
 Matrix: WATER
 Instrument ID: GC/MS:B(HP5970)

Client ID: H-W & ASSOCIATES(90042-1091-D2)
 Date Collected: 10/01/91
 Date Analyzed: 10/10/91 17:09

CAS #	Compound Name	Conc(ug/L)	CAS #	Compound Name	Conc(ug/L)
74-87-3	Chloromethane	10. N	75-27-4	Bromodichloromethane	5. N
74-83-9	Bromomethane	10. N	78-87-5	1,2-Dichloropropane	5. N
75-01-4	Vinyl Chloride	10. N	10061-01-5	cis 1,3-Dichloropropene	5. N
75-00-3	Chloroethane	10. N	79-01-6	Trichloroethene	5. N
75-09-2	Methylene Chloride	5. N	124-48-1	Dibromochloromethane	5. N
67-64-1	Acetone	100. N	79-00-5	1,1,2-Trichloroethane	5. N
75-69-4	Trichlorofluoromethane	5. N	71-43-2	Benzene	5. N
75-15-0	Carbon Disulfide	5. N	10061-02-6	trans-1,3-Dichloropropene	5. N
107-02-8	Acrolein	50. N	110-75-8	2-Chloroethyl vinyl ether	10. N
107-13-1	Acrylonitrile	50. N	75-25-2	Bromoform	5. N
75-35-4	1,1-Dichloroethene	5. N	108-10-1	4-Methyl-2-Pentanone	50. N
75-34-3	1,1-Dichloroethane	5. N	591-78-6	2-Hexanone	50. N
540-59-0	trans-1,2-Dichloroethene	5. N	127-18-4	Tetrachloroethene	5. N
67-66-3	Chloroform	5. N	79-34-5	1,1,2,2-Tetrachloroethane	5. N
107-06-2	1,2-Dichloroethane	5. N	108-88-3	Toluene	5. N
78-93-3	2-Butanone	100. N	108-90-7	Chlorobenzene	5. N
71-55-6	1,1,1-Trichloroethane	5. N	100-41-4	Ethylbenzene	5. N
56-23-5	Carbon Tetrachloride	5. N	100-42-5	Styrene	5. N
108-05-4	Vinyl Acetate	10. N	1330-20-7	Total Xylenes	5. N

Qualifier descriptions: N - Compound analyzed for but not detected.
 Number reported is the detection limit.
 * - Compound is present but less than detection limit. Should be considered an approximation.

BIOSPHERICS
VOLATILES ANALYSIS REPORT
REFERENCED METHOD:8240

Data File: >BK174::D2
 Lab. No: 91100205-3
 Matrix: WATER
 Instrument ID: GC/MS:B(HP5970)

Client ID: H-W & ASSOCIATES(90042-1091-G1)
 Date Collected: 10/01/91
 Date Analyzed: 10/10/91 17:32

CAS #	Compound Name	Conc(ug/L)	CAS #	Compound Name	Conc(ug/L)
74-87-3	Chloromethane	10. N	75-27-4	Bromodichloromethane	5. N
74-83-9	Bromomethane	10. N	78-87-5	1,2-Dichloropropane	5. N
75-01-4	Vinyl Chloride	10. N	10061-01-5	cis-1,3-Dichloropropene	5. N
75-00-3	Chloroethane	10. N	79-01-6	Trichloroethene	5. N
75-09-2	Methylene Chloride	5. N	124-48-1	Dibromochloromethane	5. N
67-64-1	Acetone	100. N	79-00-5	1,1,2-Trichloroethane	5. N
75-69-4	Trichlorofluoromethane	5. N	71-43-2	Benzene	5. N
75-15-0	Carbon Disulfide	5. N	10061-02-6	trans-1,3-Dichloropropene	5. N
107-02-8	Acrolein	50. N	110-75-8	2-Chloroethyl vinyl ether	10. N
107-13-1	Acrylonitrile	50. N	75-25-2	Bromoform	5. N
75-35-4	1,1-Dichloroethene	5. N	108-10-1	4-Methyl-2-Pentanone	50. N
75-34-3	1,1-Dichloroethane	5. N	591-78-6	2-Hexanone	50. N
540-59-0	trans-1,2-Dichloroethene	5. N	127-18-4	Tetrachloroethene	5. N
67-66-3	Chloroform	5. N	79-34-5	1,1,2,2-Tetrachloroethane	5. N
107-06-2	1,2-Dichloroethane	5. N	108-28-3	Toluene	5. N
78-93-3	2-Butanone	100. N	108-90-7	Chlorobenzene	5. N
71-55-6	1,1,1-Trichloroethane	5. N	100-41-4	Ethylbenzene	5. N
56-23-5	Carbon Tetrachloride	5. N	100-42-5	Styrene	5. N
108-05-4	Vinyl Acetate	10. N	1330-20-7	Total Xylenes	5. N

Qualifier descriptions: N - Compound analyzed for but not detected.

Number reported is the detection limit.

* - Compound is present but less than detection limit. Should be considered an approximation.

BIOSPHERICS
VOLATILES ANALYSIS REPORT
REFERENCED METHOD:8240

Data File: >BK175::D2
 Lab. No: 91100205-4
 Matrix: WATER
 Instrument ID: GC/MS:B(HP5970)

Client ID: H-W & ASSOCIATES(90042-1091-B1)
 Date Collected: 10/01/91
 Date Analyzed: 10/10/91 17:56

CAS #	Compound Name	Conc(ug/L)	CAS #	Compound Name	Conc(ug/L)
74-87-3	Chloromethane	10. N	75-27-4	Bromodichloromethane	5. N
74-83-9	Bromomethane	10. N	78-87-5	1,2-Dichloropropane	5. N
75-01-4	Vinyl Chloride	10. N	10061-01-5	cis 1,3-Dichloropropene	5. N
75-00-3	Chloroethane	10. N	79-01-6	Trichloroethene	5. N
75-09-2	Methylene Chloride	5. N	124-48-1	Dibromochloromethane	5. N
67-64-1	Acetone	100. N	79-00-5	1,1,2-Trichloroethane	5. N
75-69-4	Trichlorofluoromethane	5. N	71-43-2	Benzene	5. N
75-15-0	Carbon Disulfide	5. N	10061-02-6	trans-1,3-Dichloropropene	5. N
107-02-8	Acrolein	50. N	110-75-8	2-Chloroethyl vinyl ether	10. N
107-13-1	Acrylonitrile	50. N	75-25-2	Bromoform	5. N
76-35-4	1,1-Dichloroethene	5. N	108-10-1	4-Methyl-2-Pentanone	50. N
75-34-3	1,1-Dichloroethane	5. N	591-78-6	2-Hexanone	50. N
540-59-0	trans-1,2-Dichloroethene	5. N	127-18-4	Tetrachloroethene	5. N
67-66-3	Chloroform	5. N	79-34-5	1,1,2,2-Tetrachloroethane	5. N
107-06-2	1,2-Dichloroethane	5. N	108-88-3	Toluene	5. N
78-93-3	2-Butanone	100. N	108-90-7	Chlorobenzene	5. N
71-55-6	1,1,1-Trichloroethane	5. N	100-41-4	Ethylbenzene	5. N
56-23-5	Carbon Tetrachloride	5. N	100-42-5	Styrene	5. N
108-05-4	Vinyl Acetate	10. N	1330-20-7	Total Xylenes	5. N

Qualifier descriptions: N - Compound analyzed for but not detected.
 Number reported is the detection limit.
 * - Compound is present but less than detection limit. Should be considered an approximation.

BIOSPHERICS
VOLATILES ANALYSIS REPORT
REFERENCED METHOD:8240

Data File: >BK176::D2
Lab. No: 91100205-5
Matrix: WATER
Instrument ID: GC/MS:B(HP5970)

Client ID: H-W & ASSOCIATES(90042-1091-F1)
Date Collected: 10/01/91
Date Analyzed: 10/10/91 18:19

CAS #	Compound Name	Conc(ug/L)	CAS #	Compound Name	Conc(ug/L)
74-87-3	Chloromethane	10. N	75-27-4	Bromodichloromethane	5. N
74-83-9	Bromomethane	10. N	78-87-5	1,2-Dichloropropane	5. N
75-01-4	Vinyl Chloride	10. N	10061-01-5	cis 1,3-Dichloropropene	5. N
75-00-3	Chloroethane	10. N	79-01-6	Trichloroethene	5. N
75-09-2	Methylene Chloride	5. N	124-48-1	Dibromochloromethane	5. N
67-64-1	Acetone	100. N	79-00-5	1,1,2-Trichloroethane	5. N
75-69-4	Trichlorofluoromethane	5. N	71-43-2	Benzene	5. N
75-15-0	Carbon Disulfide	5. N	10061-02-6	trans-1,3-Dichloropropene	5. N
107-02-8	Acrolein	50. N	110-75-8	2-Chloroethyl vinyl ether	10. N
107-13-1	Acrylonitrile	50. N	75-25-2	Bromoform	5. N
75-35-4	1,1-Dichloroethene	5. N	108-10-1	4-Methyl-2-Pentanone	50. N
75-34-3	1,1-Dichloroethane	5. N	591-78-6	2-Hexanone	50. N
540-59-0	trans-1,2-Dichloroethene	5. N	127-18-4	Tetrachloroethene	5. N
67-66-3	Chloroform	5. N	79-34-5	1,1,2,2-Tetrachloroethane	5. N
107-06-2	1,2-Dichloroethane	5. N	108-88-3	Toluene	5. N
78-93-3	2-Butanone	100. N	108-90-7	Chlorobenzene	5. N
71-55-6	1,1,1-Trichloroethane	5. N	100-41-4	Ethylbenzene	5. N
56-23-5	Carbon Tetrachloride	5. N	100-42-5	Styrene	5. N
108-05-4	Vinyl Acetate	10. N	1330-20-7	Total Xylenes	5. N

Qualifier descriptions: N - Compound analyzed for but not detected.
 Number reported is the detection limit.
 * - Compound is present but less than detection limit. Should be considered an approximation.

BIOSPHERICS
VOLATILES ANALYSIS REPORT
REFERENCED METHOD:8240

Data File: >BK177::D2
Lab. No: 91100205-6
Matrix: WATER
Instrument ID: GC/MS:B(HP5970)

Client ID: H-W & ASSOCIATES(90042-1091-C1)
Date Collected: 10/01/91
Date Analyzed: 10/10/91 18:43

CAS #	Compound Name	Conc(ug/L)	CAS #	Compound Name	Conc(ug/L)
74-87-3	Chloromethane	10. N	75-27-4	Bromodichloromethane	5. N
74-83-9	Bromomethane	10. N	78-87-5	1,2-Dichloropropane	5. N
75-01-4	Methyl Chloride	10. N	10061-01-5	cis 1,3-Dichloropropene	5. N
75-00-3	Chloroethane	10. N	79-01-6	Trichloroethene	5. N
75-09-2	Methylene Chloride	5. N	124-48-1	Dibromochloromethane	5. N
67-64-1	Acetone	100. N	79-00-5	1,1,2-Trichloroethane	5. N
75-69-4	Trichlorofluoromethane	5. N	71-43-2	Benzene	5. N
75-15-0	Carbon Disulfide	5. N	10061-02-6	trans-1,3-Dichloropropene	5. N
107-02-8	Acrolein	50. N	110-75-8	2-Chloroethyl vinyl ether	10. N
107-13-1	Acrylonitrile	50. N	75-25-2	Bromoform	5. N
75-35-4	1,1-Dichloroethene	5. N	108-10-1	4-Methyl-2-Pentanone	50. N
75-34-3	1,1-Dichloroethane	5. N	591-78-6	2-Hexanone	50. N
540-59-0	trans-1,2-Dichloroethene	5. N	127-18-4	Tetrachloroethene	5. N
67-66-3	Chloroform	5. N	79-34-5	1,1,2,2-Tetrachloroethane	5. N
107-06-2	1,2-Dichloroethane	5. N	108-88-3	Toluene	5. N
78-93-3	2-Butanone	100. N	108-90-7	Chlorobenzene	5. N
71-55-6	1,1,1-Trichloroethane	5. N	100-41-4	Ethylbenzene	5. N
56-23-5	Carbon Tetrachloride	5. N	100-42-5	Styrene	5. N
108-05-4	Vinyl Acetate	10. N	1330-20-7	Total Xylenes	5. N

Qualifier descriptions: N - Compound analyzed for but not detected.
Number reported is the detection limit.
* - Compound is present but less than detection limit. Should be considered an approximation.

BIOSPHERICS
VOLATILES ANALYSIS REPORT
REFERENCED METHOD:8240

Data File: >BK178::D2
Lab. No: 91100205-7
Matrix: WATER
Instrument ID: GC/MS:B(HP5970)

Client ID: H-W & ASSOCIATES(TRIP BLANK)
Date Collected: 10/01/91
Date Analyzed: 10/10/91 19:36

CAS #	Compound Name	Conc(ug/L)	CAS #	Compound Name	Conc(ug/L)
74-87-3	Chloromethane	10. N	75-27-4	Bromodichloromethane	5. N
74-83-9	Bromomethane	10. N	78-87-5	1,2-Dichloropropane	5. N
75-01-4	Vinyl Chloride	10. N	10061-01-5	cis 1,3-Dichloropropene	5. N
75-00-3	Chloroethane	10. N	79-01-6	Trichloroethene	5. N
75-09-2	Methylene Chloride	5. N	124-48-1	Dibromochloromethane	5. N
67-64-1	Acetone	100. N	79-00-5	1,1,2-Trichloroethane	5. N
75-69-4	Trichlorofluoromethane	5. N	71-43-2	Benzene	5. N
75-15-0	Carbon Disulfide	5. N	10061-02-6	trans-1,3-Dichloropropene	5. N
107-02-8	Acrolein	50. N	110-75-8	2-Chloroethyl vinyl ether	10. N
107-13-1	Acrylonitrile	50. N	75-25-2	Bromoform	5. N
75-35-4	1,1-Dichloroethene	5. N	108-10-1	4-Methyl-2-Pentanone	50. N
75-34-3	1,1-Dichloroethane	5. N	591-78-6	2-Hexanone	50. N
540-59-0	trans-1,2-Dichloroethene	5. N	127-18-4	Tetrachloroethene	5. N
67-66-3	Chloroform	5. N	79-34-5	1,1,2,2-Tetrachloroethane	5. N
107-06-2	1,2-Dichloroethane	5. N	108-88-3	Toluene	5. N
78-93-3	2-Butanone	100. N	108-90-7	Chlorobenzene	5. N
71-55-6	1,1,1-Trichloroethane	5. N	100-41-4	Ethylbenzene	5. N
56-23-5	Carbon Tetrachloride	5. N	100-42-5	Styrene	5. N
108-05-4	Vinyl Acetate	10. N	1330-20-7	Total Xylenes	5. N

Qualifier descriptions: N - Compound analyzed for but not detected.
Number reported is the detection limit.
* - Compound is present but less than detection limit. Should be considered an approximation.

BIOSPHERICS
VOLATILES ANALYSIS REPORT
REFERENCED METHOD:8240

Data File: >BK179::D2
Lab. No: 91100205-8
Matrix: WATER
Instrument ID: GC/MS:B(HP5970)

Client ID: H-W & ASSOCIATES(90042-1091-A1)
Date Collected: 10/01/91
Date Analyzed: 10/10/91 19:29

CAS #	Compound Name	Conc(ug/L)	CAS #	Compound Name	Conc(ug/L)
74-87-3	Chloromethane	10. N	75-27-4	Bromodichloromethane	5. N
74-83-9	Bromomethane	10. N	78-87-5	1,2-Dichloropropane	5. N
75-01-4	Vinyl Chloride	10. N	10061-01-7	cis-1,3-Dichloropropene	5. N
75-00-3	Chloroethane	10. N	79-01-6	Trichloroethene	5. N
75-09-2	Methylene Chloride	5. N	124-48-1	Dibromochloromethane	5. N
67-64-1	Acetone	100. N	79-00-5	1,1,2-Trichloroethane	5. N
75-69-4	Trichlorofluoromethane	5. N	71-43-2	Benzene	5. N
75-15-0	Carbon Disulfide	5. N	10061-02-6	trans-1,3-Dichloropropene	5. N
107-02-8	Acrolein	50. N	110-75-8	2-Chloroethyl vinyl ether	10. N
107-13-1	Acrylonitrile	50. N	75-25-2	Bromoform	5. N
75-35-4	1,1-Dichloroethene	5. N	108-10-1	4-Methyl-2-Pentanone	50. N
75-34-3	1,1-Dichloroethane	5. N	591-78-6	2-Hexanone	50. N
540-59-0	trans-1,2-Dichloroethene	5. N	127-18-4	Tetrachloroethene	5. N
67-66-3	Chloroform	5. N	79-34-5	1,1,2,2-Tetrachloroethane	5. N
107-06-2	1,2-Dichloroethane	5. N	108-88-3	Toluene	5. N
78-93-3	2-Butanone	100. N	108-90-7	Chlorobenzene	5. N
71-55-6	1,1,1-Trichloroethane	5. N	100-41-4	Ethylbenzene	5. N
56-23-5	Carbon Tetrachloride	5. N	100-42-5	Styrene	5. N
108-05-4	Vinyl Acetate	10. N	1330-20-7	Total Xylenes	5. N

Qualifier descriptions: N - Compound analyzed for but not detected.
 Number reported is the detection limit.
 * - Compound is present but less than detection limit. Should be considered an approximation.

BIOSPHERICS
VOLATILES ANALYSIS REPORT
REFERENCED METHOD:8240

Data File: >BK180::D2
Lab. No: 91100205-9
Matrix: WATER
Instrument ID: GC/MS:B(HP5970)

Client ID: H-W & ASSOCIATES(90042-1091-E1)
Date Collected: 10/01/91
Date Analyzed: 10/10/91 19:53

CAS #	Compound Name	Conc(ug/L)	CAS #	Compound Name	Conc(ug/L)
74-87-3	Chloromethane	10. N	75-27-4	Bromodichloromethane	5. N
74-83-9	Bromomethane	10. N	78-87-5	1,2-Dichloropropane	5. N
72-01-4	Vinyl Chloride	10. N	10001-01-5	cis-1,3-Dichloropropene	5. N
75-00-3	Chloroethane	10. N	79-01-6	Trichloroethene	5. N
75-09-2	Methylene Chloride	5. N	124-48-1	Dibromochloromethane	5. N
67-64-1	Acetone	100. N	79-00-5	1,1,2-Trichloroethane	5. N
75-69-4	Trichlorofluoromethane	5. N	71-43-2	Benzene	5. N
75-15-0	Carbon Disulfide	5. N	10061-02-6	trans-1,3-Dichloropropene	5. N
107-02-8	Acrolein	50. N	110-75-8	2-Chloroethyl vinyl ether	10. N
107-13-1	Acrylonitrile	50. N	75-25-2	Bromoform	5. N
75-35-4	1,1-Dichloroethene	5. N	108-10-1	4-Methyl-2-Pentanone	50. N
75-34-3	1,1-Dichloroethane	5. N	591-78-6	2-Hexanone	50. N
540-59-0	trans-1,2-Dichloroethene	5. N	127-18-4	Tetrachloroethene	5. N
67-66-3	Chloroform	5. N	79-34-5	1,1,2,2-Tetrachloroethane	5. N
107-06-2	1,2-Dichloroethane	5. N	108-88-3	Toluene	5. N
78-93-3	2-Butanone	100. N	108-90-7	Chlorobenzene	5. N
71-55-6	1,1,1-Trichloroethane	5. N	100-41-4	Ethylbenzene	5. N
56-23-5	Carbon Tetrachloride	5. N	100-42-5	Styrene	5. N
108-05-4	Vinyl Acetate	10. N	1330-20-7	Total Xylenes	5. N

Qualifier descriptions: N - Compound analyzed for but not detected.
Number reported is the detection limit.
* - Compound is present but less than detection limit. Should be considered an approximation.

ORGANIC ANALYSIS DATA SHEET
HERBICIDES

LAB NAME: Biospherics Inc. MATRIX: Water
CASE No.: 91-10-0205 UNITS: $\mu\text{g/L}$
LAB No.: 1 DATE COLLECTED: 10/01/91
CLIENT NAME: Hong West DATE RECEIVED: 10/02/91
CLIENT ID.: 90042-1091-D1 DATE EXTRACTED: 10/07/91
REFERENCED METHOD: EPA 8150 DATE ANALYZED: 10/09/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
94-75-7	2,4-D	BQL	0.1
93-72-1	Silvex	BQL	0.1
93-76-1	2,4,5-T	BQL	0.1

BQL - Below Practical Quantitation Limit

ORGANIC ANALYSIS DATA SHEET
HERBICIDES

LAB NAME: Biospherics Inc. MATRIX: Water
CASE No.: 91-10-0205 UNITS: $\mu\text{g/L}$
LAB No.: 2 DATE COLLECTED: 10/01/91
CLIENT NAME: Hong West DATE RECEIVED: 10/02/91
CLIENT I.D.: 90042 1091 D2 DATE EXTRACTED: 10/07/91
REFERENCED METHOD: EPA 8150 DATE ANALYZED: 10/09/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
94-75-7	2,4-D	BQL	0.1
93-72-1	Silvex	BQL	0.1
93-76-1	2,4,5-T	BQL	0.1

BQL - Below Practical Quantitation Limit

ORGANIC ANALYSIS DATA SHEET
HERBICIDES

LAB NAME: Biospherics Inc. MATRIX: Water
CASE No.: 91-10-0205 UNITS: $\mu\text{g/L}$
LAB No.: 3 DATE COLLECTED: 10/01/91
CLIENT NAME: Hong West DATE RECEIVED: 10/02/91
CLIENT ID.: 00042-1091-G1 DATE EXTRACTED: 10/07/91
REFERENCED METHOD: EPA 8150 DATE ANALYZED: 10/09/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
94-75-7	2,4-D	BQL	0.1
93-72-1	Silvex	BQL	0.1
93-76-1	2,4,5-T	BQL	0.1

BQL - Below Practical Quantitation Limit

ORGANIC ANALYSIS DATA SHEET
HERBICIDES

LAB NAME: Biospherics Inc. MATRIX: Water
CASE No.: 91-10-0205 UNITS: $\mu\text{g/L}$
LAB No.: 4 DATE COLLECTED: 10/01/91
CLIENT NAME: Hong West DATE RECEIVED: 10/02/91
CLIENT ID.: 90042-1091-B1 DATE EXTRACTED: 10/07/91
REFERENCED METHOD: EPA 8150 DATE ANALYZED: 10/09/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
94-75-7	2,4-D	BQL	0.1
93-72-1	Silvex	BQL	0.1
93-76-1	2,4,5-T	BQL	0.1

BQL - Below Practical Quantitation Limit

ORGANIC ANALYSIS DATA SHEET
HERBICIDES

LAB NAME: Biospherics Inc. MATRIX: Water
CASE No.: 91-10-0205 UNITS: $\mu\text{g/L}$
LAB No.: 5 DATE COLLECTED: 10/01/91
CLIENT NAME: Hong West DATE RECEIVED: 10/02/91
CLIENT I.D.: 90042 1091 F1 DATE EXTRACTED: 10/07/91
REFERENCED METHOD: EPA 8150 DATE ANALYZED: 10/09/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
94-75-7	2,4-D	BQL	0.1
93-72-1	Silvex	BQL	0.1
93-76-1	2,4,5-T	BQL	0.1

BQL - Below Practical Quantitation Limit

ORGANIC ANALYSIS DATA SHEET
HERBICIDES

LAB NAME: Biospherics Inc. MATRIX: Water
CASE No.: 91-10-0205 UNITS: $\mu\text{g/L}$
LAB No.: 6 DATE COLLECTED: 10/01/91
CLIENT NAME: Hong West DATE RECEIVED: 10/02/91
CLIENT ID: 90042_1001.CI DATE EXTRACTED: 10/07/91
REFERENCED METHOD: EPA 8150 DATE ANALYZED: 10/09/91

C.A.S. Number		Sample Quantitation	Practical Quantitation Limit
94-75-7	2,4-D	BQL	0.1
93-72-1	Silvex	BQL	0.1
93-76-1	2,4,5-T	BQL	0.1

BQL - Below Practical Quantitation Limit



September 17, 1991

Mr. Doug Geller
Hong West & Associates
157 Yesler Way
Suite 505
Seattle, Washington 98104

RE: Lab # 91-08-1905

Dear Mr. Geller:

Enclosed please find the results from analyses performed on recently received samples.

If you have any questions concerning the results, please do not hesitate to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "PZD".
for Lee R. Zehner, Ph.D.
Director
Laboratory Division

LZ:jy
enclosure

Corporate Headquarters
12051 Indian Creek Court
Beltsville, Maryland 20705
(301) 369-3900
Telefax (301) 725-4908/09

Cumberland Regional Office
Crossroads Venture Center
Three Commerce Drive
Cumberland, Maryland 21502
(301) 722-9100
Telefax (301) 722-9103

BIOSPHERICS INCORPORATED

CLIENT: Hong West

DATE COLLECTED: August 16, 1991

DATE RECEIVED: August 19, 1991

MATRIX: Water

LAB I.D.: 91-08-1905

Analytical Methodology/Sample Chronicle

<u>Parameter</u>	<u>Method</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
Metals	EPA 6010/7610's	8/23/91	8/23-9/5/91
Mercury	EPA 7470	09/05/91	09/09/91

Non-conformance Summary

Samples received without 900462-0891-01 VOA container; and not enough ice packs included for shipping time; pesticide 8150/8080/8140 container received broken. All tests other than metals was cancelled as per the request of Doug Geller.

BIOSPHERICS INCORPORATED

HONG-WEST RESULTS-METALS

DATE COLLECTED: August 16, 1990

DATE RECEIVED: August 19, 1990

MATRIX: Water

UNITS: $\mu\text{g/L}$

LAB I.D.: 91-08-1905

Client I.D.:	90042-0891-D1	90042-0891-D2	90042-0891-G1	90042-0891-B1
Lab I.D.:	1	2	3	4
Parameter:				
Aluminum	<200	<200	<200	<200
Antimony	<60	<60	<60	<60
Arsenic	<10	<10	<10	<10
Barium	<200	<200	<200	<200
Beryllium	<5.0	<5.0	<5.0	<5.0
Cadmium	<5.0	<5.0	<5.0	<5.0
Calcium	76500	76500	73300	82200
Chromium	<10	<10	<10	<10
Cobalt	<50	<50	<50	<50
Copper	<25	<25	<25	<25
Iron	<100	<100	<100	<100
Lead	<3.0	<3.0	<3.0	<3.0
Magnesium	48000	48300	45300	52400
Manganese	<15	<15	<15	<15
Mercury	<0.2	<0.2	<0.2	<0.2
Nickel	<40	<40	<40	<40

BIOSPHERICS INCORPORATED

HONG-WEST TCL RESULTS-METALS

DATE COLLECTED: August 16, 1990

DATE RECEIVED: August 19, 1990

MATRIX: Water

UNITS: $\mu\text{g/L}$

LAB I.D.: 91-08-1905

Client I.D.:	90042-0891-D1	90042-0891-D2	90042-0891-G1	90042-0891-B1
--------------	---------------	---------------	---------------	---------------

Lab I.D.:	1	2	3	4
-----------	---	---	---	---

Parameter:

Potassium	<5000	<5000	<5000	<5000
Selenium	<5.0	<5.0	<5.0	<5.0
Silver	<10	<10	<10	<10
Sodium	67800	68400	58800	63300
Thallium	<10	<10	<10	<10
Tin	<30	<30	<30	<30
Vanadium	71.8	69.3	65.1	68.6
Zinc	<20	<20	<20	<20

BIOSPHERICS INCORPORATED

HONG-WEST RESULTS-METALS

DATE COLLECTED: August 16, 1990

DATE RECEIVED: August 19, 1990

MATRIX: Water

UNITS: $\mu\text{g/L}$

LAB I.D.: 91-08-1905

Client I.D.:	90042-0891-A1	90042-0891-F1	90042-0891-E1	90042-0891-C1
--------------	---------------	---------------	---------------	---------------

Lab I.D.:	5	6	7	8
-----------	---	---	---	---

Parameter:

Aluminum	<200	<200	<200	<200
Antimony	<60	<60	<60	<60
Arsenic	<10	<10	<10	<10
Barium	<200	<200	<200	<200
Beryllium	<5.0	<5.0	<5.0	<5.0
Cadmium	<5.0	<5.0	<5.0	<5.0
Calcium	80200	76000	62700	72100
Chromium	<10	<10	<10	<10
Cobalt	<50	<50	<50	<50
Copper	<25	<25	<25	<25
Iron	<100	<100	<100	<100
Lead	<3.0	<3.0	<3.0	<3.0
Magnesium	44500	44400	29900	41200
Manganese	<15	<15	<15	<15
Mercury	<0.2	<0.2	<0.2	<0.2
Nickel	<40	<40	<40	<40

BIOSPHERICS INCORPORATED

HONG-WEST TCL RESULTS-METALS

DATE COLLECTED: August 16, 1990

DATE RECEIVED: August 19, 1990

MATRIX: Water

UNITS: $\mu\text{g/L}$

LAB I.D.: 91-08-1905

Client I.D.:	90042-	90042-	90042-	90042-
Lab I.D.:	0891-A1	0891-F1	0891-E1	0891-C1
	5	6	7	8

Parameter:

Potassium	<5000	<5000	5500	<5000
Selenium	<5.0	<5.0	<5.0	<5.0
Silver	<10	<10	<10	<10
Sodium	58800	59600	32000	55400
Thallium	<10	<10	<10	<10
Tin	<30	<30	<30	<30
Vanadium	57.6	67.8	<50	61.1
Zinc	<20	<20	<20	<20

BIOSPHERICS INCORPORATED

HONG-WEST TCL RESULTS-METALS

DATE COLLECTED: August 16, 1990

DATE RECEIVED: August 19, 1990

MATRIX: Water

UNITS: $\mu\text{g/L}$

LAB I.D.: 91-08-1905

Client I.D.: 90042-

Lab I.D.: 0891-01

9

Parameter:

Potassium <5000

Selenium <5.0

Silver <10

Sodium <5000

Thallium <10

Tin <30

Vanadium <50

Zinc <20

BIOSPHERICS INCORPORATED
HONG-WEST TCL RESULTS-METALS

DATE COLLECTED: August 16, 1990

DATE RECEIVED: August 19, 1990

MATRIX: Water

UNITS: $\mu\text{g/L}$

LAB I.D.: 91-08-1905

Client I.D.: 90042-

Lab I.D.: 0891-01

9

Parameter:

Potassium <5000

Selenium <5.0

Silver <10

Sodium <5000

Thallium <10

Tin <30

Vanadium <50

Zinc <20

BIOSPHERICS[®] INCORPORATED

12051 Indian Creek Ct
Beltsville, MD 20705
(301) 369-3900

FAILURE TO COMP THE
CHAIN OF CUSTODY WILL
RESULT IN DELAYS IN RESULTS
AND REPORTING.

Chain of Custody Record

Project: July Sampling		Site: Yakima Agricultural Research Lab											
Client: Doug Geller		Phone (206) 774-0106											
Address: 18908 Hwy 99									TURN-AROUND TIME				
Lynnwood, WA 98046									VERBALS _____				
Sampler's Name/Firm: Russell Thompson, <i>Russell-Environ/Encon</i>									HARD COPY _____				
Phone: 485-5000 Sampler's Signature: <i>Russell</i>													
Sample Number	Date	Time	Matrix	No. of Containers	Analyses Required							Remarks or Sample Location	
90042-0891-D,	8/16/91	0930	water	4	X	X	X	X					
90042-0891-D,		0930		4	X	X	X	X					
90042-0891-G,		1010		4	X	X	X	X					
90042-0891-B,		1030		4	X	X	X	X					
90042-0891-A,		1055		4	X	X	X	X					
90042-0891-F,		1120		4	X	X	X	X					
90042-0891-E,		1250		4	X	X	X	X					
90042-0891-C,		1320		4	X	X	X	X					
90042-0891-O1		1330	4	X	X	X	X						
90042-0891-O2	↓	1330	2	X									
The VOA were located both TRIP to field blank													
Field Blank													
TRIP Blank													

Relinquished by: (Signature) ¹ 	Date/Time 8/16/91	Received by: (Signature)	Relinquished by: (Signature) ⁴ 	Date/Time	Shipping Carrier: Federal Express
Relinquished by: (Signature) ²	Date/Time	Received by: (Signature)	Received for Laboratory by: (Signature) 	Date/Time 8/16/91	Shipping Ticket Number: 90-1411
Relinquished by: (Signature) ³	Date/Time	Received by: (Signature)	Chain of Custody Seal: (Code) Intact Broken Absent	Lab Remarks	

BIOSPHERICS INCORPORATED

12051 Indian Creek Ct.
Beltsville, MD 20705
(301) 369-3900

ILLURE. .COM THE
CHAIN OF CUSTODY MAY
RESULT IN DELAYS IN RESULTS
AND REPORTING.

Chain of Custody Record

Project: 141 Sampling Site: Yakima Agricultural Research Lab
Client: Harry West (Dowagoder) Phone (206) 774-0106
Address: 189128 Hwy 99
Lynnwood, WA 98046
Sampler's Name/Firm: Russell Thompson / Susan Edwards
Phone: 485-5000 Sampler's Signature:

Preservative Used	HCl	-	-	-	-	-	-
Analyses Required	VOA 8240	PCP 950	PCP 950/8140				

TURN-AROUND TIME:
VERBALS _____
HAND COPY _____

Remarks or
Sample Location

Sample Number	Date	Time	Matrix	No. of Containers	VOA 8240	PCP 950	PCP 950/8140					
90042-1091-D	10/1/91	0900	water	3	X	X						
90042-1091-D ₂		0900		3	X	X						
90042-1091-G		0930		3	X	X						
90042-1091-B		0950		3	X	X						
90042-1091-A		1015		3	X	X						
90042-1091-F		1050		3	X	X						
90042-1091-E		1200		3	X	X						
90042-1091-C		1230		3	X	X						
Field Blank				1		X						
Trip Blank				1	X							

Relinquished by: (Signature) ¹	Date/Time	Received by: (Signature)	Relinquished by: (Signature) ⁴	Date/Time	Shipping Carrier:
	10/1/91 1300				
Relinquished by: (Signature) ²	Date/Time	Received by: (Signature)	Received for Laboratory by: (Signature)	Date/Time	Shipping Ticket Number:
				10/1/91 1300	
Relinquished by: (Signature) ³	Date/Time	Received by: (Signature)	Chain of Custody Seal: (Circle)	Lab Remarks	
			Intact Broken Absent	3 containers received intact	

RECEIVED

OCT 07 1991

HONG WEST & ASSOC.



October 4, 1991

Mr. Doug Geller
Hong West & Associates
18908 Highway 99
Lynwood, Washington 98046

RE: Lab ID# 91-11-0205

Dear Mr. Geller:

On October 2, 1991, we received three coolers containing samples. Please note that two of the three coolers shipped to Biospherics contained broken sample containers.

Samples 90041-1091-A1, E1 and Field Blank for 8080, 8140 and 8150 were not retrievable. The analyses for those samples were cancelled. Sample containers that were received intact will be analyzed.

Please note that Fragile stickers were on the exterior of the cooler. For your tracking purposes please note the following: Airbill Tracking #1227875191 and Customer Package Tracking #886-2931-953.

If you have any questions, please do not hesitate to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "Philippe Ourisson".

Philippe Ourisson
Manager
Analytical Laboratory

PO:jy
enclosure

Corporate Headquarters
12051 Indian Creek Court
Beltsville, Maryland 20705
(301) 369-3900
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Telefax (301) 722-9103